

**Notice of Allowability**

Application No.

09/944,328

Applicant(s)

ELLIOTT, BRIG BARNUM

Examiner

Art Unit

Jeremiah Avery

2131

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/23/07.
2. ☒ The allowed claim(s) is/are 1-33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



AYAZ SHEIKH

SUPERVISORY PATENT EXAMINER

TECHNOLOGY CENTER 2100

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Edward A. Gordon, Esq. on July 19<sup>th</sup>, 2007 with regards to the punctuation error found at the end of claim 33. Mr. Gordon authorized the examiner to correct said error and thus the application has been amended as follows:

33. Apparatus operational with light and with a polarized light pulse originating from an upstream source and terminating with a downstream destination, said apparatus comprising:

at least one means for directing quantum cryptographic light pulses;  
means for orienting said directing means into at least two orientations; and  
means for controlling said at least one directing means, wherein said controlling means is configured to, prior to receipt of quantum cryptographic light pulses, receive at least one setup message for configuring said directing means, and for causing said orienting means to orient the directing means in accordance with the setup message into an orientation that directs said quantum cryptographic light pulses from said upstream source to said downstream destination, forming a path from an origin endpoint to a terminal endpoint.

***Examiner's Statement of Reasons for Allowance***

3. Claims 1-33 are allowed over the prior art.
4. This action is in reply to the applicant's correspondence on April 23<sup>rd</sup>, 2007.
5. The following is an examiner's statement of reasons for the indication of allowable claimed subject matter.
6. As per claims 1, 17, 19 and 33, generally, the prior art of record, United States Patent No. 6,233,075 to Chang et al., fails to teach alone, or in combination, other than via hindsight, at the time of the invention, the features as discussed and remarked upon in the response of April 23<sup>rd</sup>, 2007.
7. Further, the Applicant's arguments, on pages 1 and 2 with regards to the 35 U.S.C. 101 and 112, first paragraph, rejections of claims 1-33 are persuasive and said rejections have been withdrawn.
8. Specifically, prior art dealing with quantum cryptography is known to exist, (i.e. "Cryptographically Resilient Functions" by Xian-Mo Zhang and Yuliang Zheng, as found on the world wide web at:  
<http://ieeexplore.ieee.org/iel3/18/13537/00623184.pdf?tp=&arnumber=623184&isnumber=13537>). Nowhere in the prior art is found, collectively, the *italicized* claim elements (i.e., "*sending at least one setup message to one of said network devices; based on said setup message, configuring at least one of said network devices to direct said light along said path to a terminal endpoint using at least one of said switching devices, whereby a configured path is established*"), at the time of the invention; serving to patently distinguish the invention from said prior art;

“1. A method of securely transmitting light information in a network along with a path comprised of a plurality of untrusted network devices, said untrusted network devices comprising a plurality of switching devices, and said method comprising:

*sending at least one setup message to one of said network devices;*

*based on said setup message, configuring at least one of said network devices to direct said light along said path to a terminal endpoint using at least one of said switching devices, whereby a configured path is established;*

sending a plurality of pulses of said light along said configured path, said pulses having a first set of randomly selected quantum bases; and

measuring a quantum state of said light pulses using a second set of randomly selected quantum bases, thereby providing a measured quantum state.”

9. Dependent claims 2-16, 18 and 20-32 are allowable by virtue of their dependencies.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### **Conclusion**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah Avery whose telephone number is (571) 272-8627. The examiner can normally be reached on Monday thru Friday 8:30am-5pm.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLA

  
AYAZ SHEIKH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100